What Is Claimed Is:

1. An optical lens system for refracting light passing through a lens comprising:

a lens having a first focal length; and,

an electro-active region coupled to the lens,

the electro-active region, when activated, altering the focal length of a first portion of the lens system above a 180 degree meridian of the lens to a second focal length, the second focal length different from the first focal length,

the electro-active region positioned to refract less than all of the light passing through the lens when the lens system is in use.

2. The optical lens system of claim 1 further comprising:

a controller controlling the activation of the electro-active region, the controller programmed to introduce a desired delay in the activation of the electro-active region from the time in which the controller receives a signal to activate the electro-active region.

3. The optical lens system of claim 2 wherein the controller includes an optical power prescription for an eye of a user.

4. The optical lens system of claim 2 wherein the controller receives signals containing data indicating where a user is looking.

5. The optical lens system of claim 1 wherein the electro-active region is adapted to alter the

focal length of a second portion of the lens system to a third focal length, the third focal length different from the second focal length.

6. The optical lens system of claim 5 wherein the electro-active region is adapted to simultaneously alter the focal length of the first portion of the lens system to a second focal length and the second portion of the lens system to a third focal length.

7. The optical lens system of claim 1 wherein the electro-active region includes a plurality of pixilated regions.

8. The optical lens system of claim 1 wherein the electro-active region includes a diffractive surface.

9. The optical lens system of claim 1 wherein the electro-active region is adapted to correct the refractive error of a user to substantially 20/20 distance vision.

10. The optical lens system of claim 1 wherein the electro-active region is between a first fixed surface of the lens and a second fixed surface of the lens.

11. The optical lens system of claim 1 wherein a surface of the lens has a scratch resistant coating.

12. The optical lens system of claim 1 wherein a surface of the lens has an anti-reflective

coating.

13. The optical lens system of claim 1 wherein the lens provides astigmatic power and axis correction for a user.

14. The optical lens system of claim 1 wherein the electro-active region is centered on the lens.

15. The optical lens system of claim 1 wherein the electro-active region includes a liquid crystal.

16. The optical lens system of claim 1 wherein the lens includes a photochromatic agent.

17. The optical lens system of claim 1, further comprising an eyeglass frame coupled to the lens.

18. The optical lens system of claim 1 wherein the lens is supported by a phoropter.

19. The optical lens system of claim 1 further comprising:

a range finder coupled to a surface of the lens.

20. The optical lens system of claim 1 wherein the electro-active region contains a pixelated element.

21. The optical lens system of claim 1 wherein the electro-active region contains a diffractive element.

22. The optical lens system of claim 1 wherein the electro-active region contains a liquid-crystal element.

23. The optical lens system of claim 1 wherein the electro-active region contains a material whose refractive index is altered by an electrical voltage.

24. The optical lens system of claim 1 wherein the lens includes a presbyopic correction region and the electro-active region is adapted to correct for an astigmatism created by the presbyopic correction region.

25. The optical lens system of claim 24 wherein the electro-active region is adapted to subtract a portion of the astigmatism created by the presbyopic correction region.

26. The optical lens system of claim 24 wherein the electro-active region is adapted to offset a portion of the astigmatism created by the presbyopic correction region.

27. The optical lens system of claim 1 wherein the lens is a semi-finished eyeglass lens blank.

28. The optical lens system of claim 1 wherein the electro-active region is adapted to focus the near vision or intermediate vision or both of a user and wherein a portion of the electro-active region is located above a 180 degree meridian of the lens.

29. The optical lens system of claim 1,

wherein the lens has a fixed front surface and a fixed back surface,

wherein the lens is adapted to provide astigmatism correction for a user,

wherein the electro-active region provides spherical plus power for the user, and

wherein the sum of the power of the lens plus the power of the electro-active region provides the needed power correction for the near-point vision of a user.

30. The optical lens system of claim 1 wherein the electro-active region contains a failsafe zone usable to view objects in the distance when the electro-active region malfunctions.

31. An optical lens system comprising:

a lens having a first focal length; and,

an electro-active region coupled to the lens,

the electro-active region, when activated, altering the focal length of a first portion of the lens system to a second focal length, the second focal length different from the first focal length wherein the electro-active region contains a fail-safe zone usable to view objects in the distance when the electro-active region malfunctions.

32. The optical lens system of claim 31 wherein the lens system defaults to a focal length of greater than 21 inches when the electro-active region malfunctions.

33. The optical lens system of claim 31 wherein the lens system defaults to a distance focal length when the electro-active region malfunctions.

34. The optical lens system of claim 31 wherein the lens system defaults to a focal length equal to the focal length of the lens when the electro-active region malfunctions.

35. An optical lens system for refracting light passing through a lens comprising:

a lens having a fixed focal length; and

an electro-active region coupled to the lens,

the coupled lens and electro-active region creating more than one simultaneous focal length for the lens system when the electro-active region is activated, the electro-active region positioned at least partially above a 180 degree meridian line of the lens, the electro-active region sized to refract less than 50% of the light passing through the lens.

36. An optical lens system comprising:

a lens having a first focal length; and

an electro-active region coupled to the lens,

the electro-active region, when activated, altering the focal length of a first portion of the entire lens system to a second focal length, the second focal length different from the first focal length, the lens system having two focal lengths when the electro-active

region is activated, the electro-active region having a first outside surface and a second outside surface, the first outside surface being equidistant from the second outside surface.

37. An optical lens system comprising:

a lens having a first focal length; and

an electro-active region coupled to the lens,

the electro-active region, when activated, altering the focal length of a first portion of the lens system to a second focal length, the second focal length different from the first focal length, the lens system having two different focal lengths when the electro-active region is activated,

the second focal length determined by the distance vision needs of a user,

wherein a fixed outer surface of the electro-active region facing away from a wearer has a radius of curvature proportional to a radius of curvature of the lens adjacent to the electro-active region.

38. An optical lens system comprising:

a lens having a first focal length;

an electro-active region coupled to the lens,

the electro-active region, when activated, altering the focal length of a first portion of the lens system to a second focal length, the second focal length different from the first focal length; and,

a tint effect electro-active region coupled to the lens.

39. An optical lens system comprising:

a lens having a first focal length;

an electro-active region coupled to the lens,

the electro-active region, when activated, altering the focal length of a first portion of the lens system to a second focal length, the second focal length different from the first focal length; and,

an anti-reflective coated electro-active region coupled to the lens.

40. An optical lens system comprising:

a lens having a first focal length; and,

an electro-active region coupled to the lens,

the electro-active region, when activated, altering the focal length of a first portion of the lens system to a second focal length, the second focal length different from the first focal length, wherein the lens system includes an image shifting prismatic zone in the electro-active region.

41. An optical lens system comprising:

a lens having a first focal length; and,

an electro-active region coupled to the lens,

the electro-active region, when activated, altering the focal length of a first portion of the lens system to a second focal length, the second focal length different from the first focal length, wherein the electro-active region is a defined near vision electro-active region located intermittently above a 180 degree meridian of the lens.

42. A spectacle lens comprising:

a front surface;

a back surface;

a peripheral edge; and

a vision correcting area having a refractive error correction and containing electro-active material, wherein at least a portion of the refractive error correction is based on a lens prescription determined by a wave front analysis of a wearer's eye and wherein the vision correcting area corrects non-conventional refractive error to provide at least a part of the wearer's vision correction and wherein the peripheral edge is capable of being modified to fit within an eyeglass frame.

43. The lens of claim 42 wherein the vision correcting area corrects for conventional refractive error.

44. The lens of claim 42 wherein the vision correcting area corrects for aberrations of the lens.

45. The lens of claim 42 wherein the lens comprises a material having a variable index of refraction.

46. The lens of claim 42 wherein the lens comprises a material having a modifiable index of refraction.

47. The lens of claim 42 wherein the lens is capable of correcting non-conventional refractive error caused by one of aberrations, irregular astigmatism, and ocular layer irregularities.

48. The lens of claim 42 wherein the lens provides a prismatic power.

49. The lens of claim 42 wherein a portion of the lens changes focus as an eye's line of sight passes over the vision correcting area.

50. The lens of claim 42 wherein the lens has a chromic characteristic.

51. The lens of claim 42 wherein correction of unconventional refractive error is provided by localized changes in a refractive power of the lens.

52. The lens of claim 42 wherein the lens corrects the wearer's vision to better than 20/20.

53. The lens of claim 42 wherein the lens corrects the wearer's vision to better than 20/10.

54. The lens of claim 42 wherein the lens has multiple focal lengths, at least one focal length provided by the electro-active material.

55. The lens of claim 54 further comprising a switch coupled to the lens for manual adjustment of the focal length.

56. The lens of claim 42 wherein the lens changes focus based on the location of the object being viewed.

57. The lens of claim 42 wherein the lens is coupled to a controller and a power source.

58. The lens of claim 57 wherein the lens is coupled to an eye-tracker.

59. The lens of claim 57 wherein the lens is coupled to a rangefinder.

60. The lens of claim 42 wherein the lens provides distance vision correction in the event of a failure of the electro-active material.

61. A method for producing a spectacle lens for the correction of non-conventional refractive error comprising:

determining a lens prescription for unconventional refractive error based in part on a wave front analysis of an eye.

providing a lens to correct for refractive error having a front surface, a back surface, a vision correcting area containing electro-active material, and a peripheral edge;

modifying the lens to provide correction of least a portion of the lens prescription for unconventional refractive error;

modifying the peripheral edge of the lens to fit within an eyeglass frame; and

inserting the lens into the eyeglass frame.

62. The method of claim 61 wherein the lens provided is manufactured from a semi-finished lens blank.

63. The method of claim 61 wherein the unconventional refractive error is corrected in part by a refractive index change.

64. A spectacle lens comprising:

a front surface;

a back surface;

a peripheral edge; and

a vision correcting area having a refractive error correction and containing electro-active material, wherein the vision correcting area uses adaptive optics to correct for non-conventional refractive error to provide a wearer better than 20/20 vision and wherein the peripheral edge is capable of being modified to fit within an eyeglass frame.

65. An electro-active lens comprising:

a plurality of electrodes; and

an insulator wherein the insulator prevents the flow of electricity from one electrode to another.

66. The electro-active lens of claim 65 wherein the insulator is substantially transparent.

67. An electro-active lens comprising

an electro-active layer; and

a conductive layer comprising a pattern of electrodes electrically connected to the electro-active layer.

68. The electro-active lens of claim 67 wherein the conductive layer is transparent.

69. The electro-active lens of claim 68 wherein the conductive layer is indium tin oxide.

70. The electro-active lens of claim 67 wherein the pattern of electrodes are arranged in a grid.

71. The electro-active lens of claim 67 wherein each electrode is electrically insulated from adjacent electrodes.

72. The electro-active lens of claim 67 wherein the conductive layer covers the entire lens.

73. The electro-active lens of claim 67 wherein the conductive layer covers only a portion of the lens.

74. The electro-active lens of claim 67 wherein the conductive layer is attached to a metallic layer.

75. The electro-active lens of claim 74 wherein the conductive layer is attached to the metallic layer by vacuum deposition.

76. The electro-active lens of claim 74 wherein the conductive layer is attached to the metallic layer by sputtering.

77. The electro-active lens of claim 67 wherein the conductive layer is attached to a transparent insulating layer.

78. The electro-active lens of claim 67 wherein separate electrical voltages applied to the electrodes create regions having different indices of refraction in the electro-active layer.

79. The electro-active lens of claim 67 wherein the electro-active layer contains a polymer gel.

80. The electro-active lens of claim 67 wherein the electro-active layer contains a liquid crystal.

81. The electro-active lens of claim 67 wherein the conductive layer is etched.

82. The electro-active lens of claim 67 wherein the electrodes are connected to a controller.

83. The electro-active lens of claim 67 wherein the pattern of electrodes is substantially

circular.

84. An electro-active lens comprising:

an electro-active material of a substantially constant thickness;

at least one alignment layer; and

a plurality of conductive electrode grids or arrays comprising a plurality of elements, wherein each grid or array element is an electrode.

85. The electro-active lens of claim 84, wherein each electrode is isolated from other electrodes by an insulating material.

86. The electro-active lens of claim 85, wherein the insulating material is an oxide.

87. The electro-active lens of claim 86, wherein the insulating material is silicon oxide.

88. The electro-active lens of claim 85, wherein the insulating material is substantially transparent.

89. The electro-active lens of claim 84, wherein the grids or arrays are substantially circular and concentric with respect to one another.

90. The electro-active lens of claim 84, wherein the electro-active material contains a liquid crystal.

91. An electro-active lens comprising:

at least one layer of electro-active material having substantially constant thickness;

at least one alignment layer; and

at least one grid or array of conductive electrodes in electrical contact with the at least one layer of electro-active material, wherein the optical power of the electro-active lens is varied by altering an applied voltage from a power source to individual electrodes of the grid or array.

92. The electro-active lens of claim 91 wherein a change in refractive index of the electro-active material is at least 0.02 units per volt.

93. The electro-active lens of claim 91 wherein the electro-active material contains a liquid crystal.